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ABSTRACT:

The present study examines the applicability of polymermortarpanels using a methylmethacrylate (MMA) solution of wasteexpandedpolystyrene (EPS) to develop effective recycling processes for the EPS, referring to the strengthproperties of a polymer-impregnated mortarpanel with almost the same performance as commercial products. An MMA solution of EPS is prepared by dissolving EPS in MMA, and unreinforced and steel fiber-reinforced polymermortars are mixed using the EPS-MMA-based solution as a liquid resin or binder. Polymermortarpanels (PMPs) using the EPS-MMA-based polymermortars without and with steel fiber and crimped wire cloth reinforcements and steel fiber-reinforced polymer-impregnated mortarpanel (PIMP) are prepared on trial, and tested for flexural behavior under four-point loading. The EPS-MMA-based PMPs are more ductile than the PIMP, and have a high load-bearing capacity. Consequently, they can replace PIMP in practical applications.